Listing of the Claims:

A listing of the entire set of pending claims is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (previously presented) A method of decentralized medium access control in a communications network including at least one wireless device, comprising:

dividing time into a sequence of at least one superframe comprising at least one dynamic beacon period and at least one data transmission period, said dynamic beacon period having a predetermined maximum length and including a variable plurality of beacon slots;

beaconing by transmission of a beacon frame in a unique one of said plurality of beacon slots by every device in an awake state, said beacon frame including information; and

grouping said plurality of beacon slots into at least one contiguous dynamic beacon period, wherein at least one free beacon slot of said at least one contiguous dynamic beacon period is determined based on beacons received from other devices and information included in said received beacons.

2. (previously presented) The method of claim 1, further comprising said dynamic beacon period dynamically expanding or shrinking in length by a multiple $N \geq 1$ of beacon slots within said predetermined maximum size in accordance with the number of occupied beacon slots.

3. (previously presented) The method of claim 2, further comprising:

receiving by each beaconing device beacons transmitted by other devices within a radio range of the beaconing device; and

each beaconing device autonomously determining the length of said at least one contiguous dynamic beacon period in which it is beaconing based on the received beacons from other devices and information included in said received beacons.

4. (previously presented) The method of claim 3, further comprising:

determining a last occupied beacon slot of said at least one contiguous dynamic beacon period based on beacons received from other devices and information included in said received beacons;

a joining device transmitting its beacon in the free beacon slot of said at least one contiguous dynamic beacon period;

detecting by a device that its beacon has collided with a beacon of another device; and

when a device has detected that its beacon has collided with a beacon of another device, said detecting device subsequently transmitting its beacon in the free beacon slot of a dynamic beacon period.

5-6. (cancelled)

7. (previously presented) The method of claim 1 further comprising:

reserving each of a pre-determined number of beacon slots as a special purpose slot;

a joining device transmitting its beacon in any free beacon slot other than the free beacon slot that is a special purpose slot;

detecting by a device that its beacon has collided with a beacon of another device; and

when a device has detected that its beacon has collided with a beacon of another device, said detecting device subsequently transmitting its beacon in any free beacon slot other than the free beacon slot that is a special purpose slot.

8-12. (cancelled)

13. (previously presented) The method of claim 1, further comprising:

a joining device performing:

a. transmitting its beacon in a special purpose slot for at least one superframe, and

b. thereafter moving its beacon to a different free beacon slot in the at least one contiguous dynamic beacon period; and

a detecting device performing

a. transmitting its beacon in a special purpose slot for at least one superframe, and

b. thereafter moving its beacon to a different free beacon slot in the at least one contiguous dynamic beacon period.

14-15. (cancelled)

16. (previously presented) The method of claim 1, further comprising:

reserving each of a pre-determined number of beacon slots of said at least one contiguous dynamic beacon period as a special purpose slot;

determining at least one free beacon slot of said at least one contiguous dynamic beacon period based on beacons received from other devices and information included in said received beacons; and

a joining device simultaneously transmitting its beacon in the determined at least one free beacon slot and in a special purpose slot for a predetermined number of superframes.

17-18. (cancelled)

19. (previously presented) The method of claim 1, further comprising:

determining at least one free beacon slot of said at least one contiguous dynamic beacon period based on beacons received from other devices and information included in said received beacons;

detecting by a device that its beacon has collided with a beacon of another device; and

when a device has detected that its beacon has collided with a beacon of another device, said detecting device subsequently performing

a. simultaneously transmitting its beacon in its previous beacon slot and in one of the determined at least one free beacon slot for a predetermined number of superframes, and

b. after said simultaneous transmission, only ceasing transmission of a beacon in its previous beacon slot.

20-21. (cancelled)

22. (previously presented) The method of claim 1, further comprising:

determining a next free beacon slot in the direction of a beginning of said at least one contiguous dynamic beacon period based on beacons received from other devices and information included in said received beacons; and

a device, that has already transmitted at least one beacon, moving its beacon from its previous beacon slot to the determined next free beacon slot.

23-24. (cancelled)

25. (previously presented) The method of claim 22 wherein said determining further comprises jumping over any occupied beacon slot that is one of not able to move and not willing to move.

26-27. (cancelled)

28. (previously presented) The method of claim 1 further comprising:

reserving each of a pre-determined number of beacon slots of said at least one contiguous dynamic beacon period as a special purpose slot;

determining at least one free beacon slot of said at least one contiguous dynamic beacon period based on a slot not being a special purpose slot and beacons received from other devices and information included in said received beacons; and

a beaconing device moving its beacon to the determined at least one free beacon slot.

29-30. (cancelled)

31. (previously presented) The method of claim 1, further comprising:

a device, that has already transmitted at least one beacon, ascertaining that the beacon slot of the device is the last beacon slot of said at least one contiguous dynamic beacon period based on beacons received from other devices and information included in said received beacons, and

when the device ascertains that its beacon slot is the last beacon slot, moving its beacon from its previous beacon slot to the determined at least one free beacon slot.

32-33. (cancelled)

34. (previously presented) The method of claim 28, wherein the determining further comprises determining said at least one free beacon slot as the first beacon slot in the at least one contiguous dynamic beacon period after a beginning of the at least one contiguous dynamic beacon period.

35-36. (cancelled)

37. (previously presented) The method of claim 22, wherein said moving further comprises simultaneously transmitting its beacon in its previous beacon slot and in the determined at least one free beacon slot for a predetermined number of superframes.

38-41. (cancelled)

42. (previously presented) The method of claim 22, further comprising, prior to said moving, the device

reserving each of a pre-determined number of beacon slots of said at least one contiguous dynamic beacon period as a special purpose slot; and

transmitting a beacon in a special purpose slot.

43. (cancelled)

44. (previously presented) The method of claim 28, further comprising, prior to said moving, transmitting a beacon in a special purpose slot.

45-51. (cancelled)

52. (previously presented) The method of claim 1, further comprising a device announcing in its beacon the length of the dynamic beacon period based on beacons received from other devices and information included in said received beacons.

53-55. (cancelled)

56. (previously presented) A communications network comprising a plurality of devices that include dynamic beacon periods for transmission of their beacon frames by performing the decentralized medium access control method of claim 1.

57-59. (cancelled)

60. (previously presented) A wireless device that manages beaconing over a medium in a distributed manner, comprising:

an antenna for sending and receiving beacons over the wireless medium;

a receiver coupled to the antenna to receive beacons transmitted over the wireless medium;

a transmitter coupled to the antenna to transmit beacons over the wireless medium;

a beacon processing module to process sent and received beacons for distributed beaconing management over the medium;

a processor to divide time into a sequence of at least one superframe, each said superframe having at least one dynamic beacon period having a dynamic length with a pre-determined upper bound and that includes a plurality of beacon slots, and coupled to:

i. the transmitter and the receiver to send and receive, respectively, beacon frames during said at least one dynamic beacon period of the at least one superframe,

ii. the beacon processing module to -

manage dynamic beacon period format and length including dynamic determination of dynamic beacon period length, inclusion of a predetermined plurality of beacon slot types, recordation of beacon slot occupancy and implementation of beacon slot switches,

format beacon frames for transmission comprising each of the beacon slot types, such that the beacon frame announces a length of the beacon frame dynamically determined by the device, and

format a beacon frame for transmission in the at least one beacon slot, that includes beacon slot occupancy information and beacon slot switch information.

61. (previously presented) The wireless device of claim 60, wherein:

each superframe further comprises a plurality of medium access slots allocated between said at least one contiguous dynamic beacon period and a data transmission phase;

the wireless device further comprising

a bitmap operably connected to said processor and arranged to have at least one bit that corresponds to a beacon slot of said at least one contiguous dynamic beacon period, and

a memory operably connected to said processor and arranged to store beacon slot occupancy information of each beacon transmitted by said transmitter and received by said receiver; and

said beacon processing module further configured to

set and reset said at least one bit of said bitmap via said processor in accordance with beacon slot occupancy information in said transmitted and received beacons, and

store and delete information concerning beacon slot occupancy, dynamic beacon period position and length that is contained in beacons transmitted by said transmitter and received by said receiver.

62. (previously presented) The method of claim 1, wherein said free beacon slot is a first free beacon slot after the last occupied beacon slot.

63. (previously presented) The method of claim 1, wherein said free beacon slot is a randomly-chosen free slot within a pre-determined number of beacon slots after the last occupied beacon slot.

64. (previously presented) The wireless device of claim 60, wherein at least one free beacon slot of said at least one contiguous dynamic beacon period is determined based on beacons received from other devices and information included in said received beacons.

65. (previously presented) The wireless device of claim 60, wherein said free beacon slot is a first free beacon slot after the last occupied beacon slot.

66. (previously presented) The wireless device of claim 60, wherein said free beacon slot is a randomly-chosen free slot within a pre-determined number of beacon slots after the last occupied beacon slot.